

REPLACEMENT SHEET

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FIG. 8A

EYFP-BARR2-Ub

661/221 691/231
 CTG CTG GAG TTC GTG ACC GCC GCC GGG ATC ACT CTC GGC ATG GAC GAG CTG TAC AAG TCC
 L L E F V T A A G I T L G M D E L Y K S
 721/241 751/251
 GGA CTC AGA TCT CGA GCT CAA GCT TCG AAT TCT GCA GTC GAC GGT ACC ACG CGC ACC
 G L R S R A Q A S K S A V D G T T R T
 1/1 31/11
 ATG GGT GAA AAA CCC GGG ACC AGG GTC TTC AAG AAG TCG AGC CCT AAC TGC AAG CTC ACC
 M G E K P G T R V F K K S S P N C K L T
 61/21 91/31
 GTG TAC TTG GGC AAG CGT GAC TTT GTG GAT CAC TTG GAC AAA GTG GAT CCT GTC GAT GGT
 V Y L G K R D F V D H L D K V D P V D G
 121/41 151/51
 GTG GTG CTT GTG GAT CCT GAC TAC TTG AAG GAC CGG AAA GTG TTT GTG ACC CTC ACC TGT
 V V L V D P D Y L K D R K V F V T L T C
 181/61 211/71
 GCC TTC CGC TAT GGC CGA GAA GAC CTG GAT GTA CTG GGC CTG TCT TTC CGC AAA GAT CTG
 A F R Y G R E D L D V L G L S F R K D L
 241/81 271/91
 TTC ATC GCC ACC TAC CAG GCC TTC CCC CCC ATG CCC AAC CCA CCT CGG CCC CCC ACC CGC
 F I A T Y Q A F P P M P N P P R P P T R
 301/101 331/111
 CTA CAG GAC CGA CTG CTG AAG AAG TTG GGC CAG CAT GCC CAC CCC TTT TTT TTC ACA ATA
 L Q D R L L K K L G Q H A H P F F F T I
 361/121 391/131
 CCC CAG AAT TTG CCT TGC TCC GTC ACA CTG CAG CCA GGA CCG GAG GAC ACA GGG AAG GCC
 P Q N L P C S V T L Q P G P E D T G K A
 421/141 451/151
 TGT GGA GTA GAC TTT GAG ATT CGA GCC TTC TGT GCC AAA TCT ATA GAA GAA AAA AGC CAC
 C G V D F E I R A F C A K S I E E K S H
 481/161 511/171
 AAA AGG AAC TCC GTG CGG CTT ATC ATC AGA AAG GTA CAG TTT GCT CCT GAG ACA CCC GGC
 K R N S V R L I I R K V Q F A P E T P G
 541/181 571/191
 CCC CAG CCA TCA GCT GAA ACC ACA CGC CAC TTC CTC ATG TCT GAC CGG AGG TCC CTG CAC
 P Q P S A E T T R H F L M S D R R S L H
 601/201 631/211
 CTA GAG GCT TCC CTG GAC AAA GAG CTG TAC TAC CAT GGG GAA CCC CTC AAT GTC AAC GTC
 L E A S L D K E L Y Y H G E P L N V N V
 661/221 691/231
 CAC GTC ACC AAC AAT TCT GCC AAG ACC GTC AAG AAG ATC AGA GTG TCT GTG AGA CAG TAT
 H V T N N S A K T V K K I R V S V R Q Y
 721/241 751/251
 GCC GAC ATT TGC CTC TTC AGC ACC GCG CAG TAC AAG TGT CCT GTG GCT CAG CTT GAA CAA
 A D I C L F S T A Q Y K C P V A Q L E Q
 781/261 811/271
 GAT GAC CAG GTG TCT CCC AGT TCC ACA TTC TGC AAG GTG TAC ACC ATA ACC CCG CTG CTC
 D D Q V S P S S T F C K V Y T I T P L L
 841/281 871/291
 AGT GAC AAC CGA GAG AAG CGT GGC CTT GCC CTT GAT GGG CAA CTC AAG CAC GAA GAC ACC
 S D N R E K R G L A L D G Q L K H E D T
 901/301 931/311
 AAC CTG GCT TCC AGC ACC ATT GTG AAG GAG GGA GCC AAC AAG GAG GTG CTG GGA ATC CTA
 N L A S S T I V K E G A N K E V L G I L
 961/321 991/331
 GTA TCC TAC AGG GTC AAG CTG AAG CTG GTG GTG TCT CGA GGC GGG GAT GTC TCC GTG GAG
 V S Y R V K V K L V V S R G G D V S V E
 1021/341 1051/351
 CTA CCT TTC GTC CTA ATG CAC CCC AAG CCC CAC GAC CAC ATC ACC CTT CCC CGA CCC CAG
 L P F V L M H P K P H D H I T L P R P Q
 1081/361 1111/371
 TCA GCC CCC CGG GAA ATA GAC ATC CCT GTG GAT ACC AAC CTC ATT GAA TTC GAT ACC AAC
 S A P R E I D I P V D T N L I E F D T N
 1141/381 1171/391
 TAT GCC ACA GAC GAC GAC ATC GTG TTT GAG GAC TTT GCG AGG CTT CGG CTG AAG GGG ATG
 Y A T D D D I V F E D F A R L R L K G M
 1201/401 1231/410

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FIG. 8B

AAG GAT GAC GAC TGT GAT GAC CAG TTC TGC GTC GAC CAG ATC TTC GTG AAG ACT CTG
 K D D D C D D Q F C V D Q I F V K T L
 22/8 52/18
 ACT GGT AAG ACC ATC ACC CTC GAG GTG GAG CCC AGT GAC ACC ATC GAG AAT GTC AAG GCA
 T G K T I T L E V E P S D T I E N V K A
 82/28 112/38
 AAG ATC CAA GAT AAG GAA GGC ATT CCT CCT GAT CAG CAG AGG TTG ATC TTT GCC GGA AAA
 K I Q D K E G I P P D Q Q R L I F A G K
 142/48 172/58
 CAG CTG GAA GAT GGT CGT ACC CTG TCT GAC TAC AAC ATC CAG AAA GAG TCC ACC TTG CAC
 Q L E D G R T L S D Y N I Q K E S T L H
 202/68
 CTG GTA CTC CGT CTC AGA GGT GGG TGA
 L V L R L R G G ***

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FIG. 9A

EYFP-BARR2-Ub48

661/221 691/231
CTG CTG GAG TTC GTG ACC GCC GCC GGG ATC ACT CTC GGC ATG GAC GAG CTG TAC AAG TCC
L L E F V T A A G I T L G M D E L Y K S
721/241 751/251
GGA CTC AGA TCT CGA GCT CAA GCT TCG AAT TCT GCA GTC GAC GGT ACC ACG CGC ACC
G L R S R A Q A S K S A V D G T T R T
1/1 31/11
ATG GGT GAA AAA CCC GGG ACC AGG GTC TTC AAG AAG TCG AGC CCT AAC TGC AAG CTC ACC
M G E K P G T R V F K K S S P N C K L T
61/21 91/31
GTG TAC TTG GGC AAG CGT GAC TTT GTG GAT CAC TTG GAC AAA GTG GAT CCT GTC GAT GGT
V Y L G K R D F V D H L D K V D P V D G
121/41 151/51
GTG GTG CTT GTG GAT CCT GAC TAC TTG AAG GAC CGG AAA GTG TTT GTG ACC CTC ACC TGT
V V L V D P D Y L K D R K V F V T L T C
181/61 211/71
GCC TTC CGC TAT GGC CGA GAA GAC CTG GAT GTA CTG GGC CTG TCT TTC CGC AAA GAT CTG
A F R Y G R E D L D V L G L S F R K D L
241/81 271/91
TTC ATC GCC ACC TAC CAG GCC TTC CCC CCC ATG CCC AAC CCA CCT CGG CCC CCC ACC CGC
F I A T Y Q A F P P M P N P P R P P T R
301/101 331/111
CTA CAG GAC CGA CTG CTG AAG AAG TTG GGC CAG CAT GCC CAC CCC TTT TTT TTC ACA ATA
L Q D R L L K K L G Q H A H P F F F T I
361/121 391/131
CCC CAG AAT TTG CCT TGC TCC GTC ACA CTG CAG CCA GGA CCG GAG GAC ACA GGG AAG GCC
P Q N L P C S V T L Q P G P E D T G K A
421/141 451/151
TGT GGA GTA GAC TTT GAG ATT CGA GCC TTC TGT GCC AAA TCT ATA GAA GAA AAA AGC CAC
C G V D F E I R A F C A K S I E E K S H
481/161 511/171
AAA AGG AAC TCC GTG CGG CTT ATC ATC AGA AAG GTA CAG TTT GCT CCT GAG ACA CCC GGC
K R N S V R L I I R K V Q F A P E T P G
541/181 571/191
CCC CAG CCA TCA GCT GAA ACC ACA CGC CAC TTC CTC ATG TCT GAC CGG AGG TCC CTG CAC
P Q P S A E T T R H F L M S D R R S L H
601/201 631/211
CTA GAG GCT TCC CTG GAC AAA GAG CTG TAC TAC CAT GGG GAA CCC CTC AAT GTC AAC GTC
L E A S L D K E L Y Y H G E P L N V N V
661/221 691/231
CAC GTC ACC AAC AAT TCT GCC AAG ACC GTC AAG AAG ATC AGA GTG TCT GTG AGA CAG TAT
H V T N N S A K T V K K I R V S V R Q Y
721/241 751/251
GCC GAC ATT TGC CTC TTC AGC ACC GCG CAG TAC AAG TGT CCT GTG GCT CAG CTT GAA CAA
A D I C L F S T A Q Y K C P V A Q L E Q
781/261 811/271
GAT GAC CAG GTG TCT CCC AGT TCC ACA TTC TGC AAG GTG TAC ACC ATA ACC CCG CTG CTC
D D Q V S P S S T F C K V Y T I T P L L
841/281 871/291
AGT GAC AAC CGA GAG AAG CGT GGC CTT GCC CTT GAT GGG CAA CTC AAG CAC GAA GAC ACC
S D N R E K R G L A L D G Q L K H E D T
901/301 931/311
AAC CTG GCT TCC AGC ACC ATT GTG AAG CAG GGA GCC AAC AAG GAG GTG CTG GGA ATC CTA
N L A S S T I V K E G A N K E V L G I L
961/321 991/331
GTA TCC TAC AGG GTC AAG GTG AAG CTG GTG GTG TCT CGA GGC GGG GAT GTC TCC GTG GAG
V S Y R V K V K L V V S R G G D V S V E
1021/341 1051/351
CTA CCT TTC GTC CTA ATG CAC CCC AAG CCC CAC GAC CAC ATC ACC CTT CCC CGA CCC CAG
L P F V L M H P K P H D H I T L P R P Q
1081/361 1111/371
TCA GCC CCC CGG GAA ATA GAC ATC CCT GTG GAT ACC AAC CTC ATT GAA TTC GAT ACC AAC
S A P R E I D I P V D T N L I E F D T N
1141/381 1171/391
TAT GCC ACA GAC GAC GAC ATC GTG TTT GAG GAC TTT GCG AGG CTT CGG CTG AAG GGG ATG
Y A T D D D I V F E D F A R L R L K G M
1201/401 1231/410

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FIG. 9B

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AAG GAT GAC GAC TGT GAT GAC CAG TTC TGC GTC GAC CAG ATT TTC GTC AAG ACT TTG
K   D   D   D   C   D   D   Q   F   C   V   D   Q   I   F   V   K   T   L
22/8                                     52/18
ACC GGT AAA ACC ATA ACA TTG GAA GTT GAA TCT TCC GAT ACC ATC GAC AAC GTT AAG TCG
T   G   K   T   I   T   L   E   V   E   S   S   D   T   I   E   N   V   K   S
82/28                                     112/38
AAA ATT CAA GAC AAG GAA GGT ATC CCT CCA GAT CAA CAA AGA TTG ATC TTT GCC GGT AGG
K   I   Q   D   K   E   G   I   P   P   D   Q   Q   R   L   I   F   A   G   R
142/48                                     172/58
CAG CTA GAA GAC GGT AGA ACG CTG TCT GAT TAC AAC ATT CAG AAG GAG TCC ACC TTA CAT
Q   L   E   D   G   R   T   L   S   D   Y   N   I   Q   K   E   S   T   L   H
202/68
CTT GTG CTA AGG CTA AGA GGT GGT TGA
L   V   L   R   L   R   G   G   ***

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FIG. 10A

EGFP-BARR2-Ub48

661/221 691/231
CTG CTG GAG TTC GTG ACC GCC GCC GGG ATC ACT CTC GGC ATG GAC GAG CTG TAC AAG TCC
L L E F V T A A G I T L G M D E L Y K S
721/241 751/251
GGA CTC AGA TCT CGA GCT CAA GCT TCG AAT TCT GCA GTC GAC GGT ACC ACG CGC ACC
G L R S R A Q A S K S A V D G T T R T
1/1 31/11
ATG GGT GAA AAA CCC GGG ACC AGG GTC TTC AAG AAG TCG AGC CCT AAC TGC AAG CTC ACC
M G E K P G T R V F K K S S P N C K L T
61/21 91/31
GTG TAC TTG GGC AAG CGT GAC TTT GTG GAT CAC TTG GAC AAA GTG GAT CCT GTC GAT GGT
V Y L G K R D F V D H L D K V D P V D G
121/41 151/51
GTG GTG CTT GTG GAT CCT GAC TAC TTG AAG GAC CGG AAA GTG TTT GTG ACC CTC ACC TGT
V V L V D P D Y L K D R K V F V T L T C
181/61 211/71
GCC TTC CGC TAT GGC CGA GAA GAC CTG GAT GTA CTG GGC CTG TCT TTC CGC AAA GAT CTG
A F R Y G R E D L D V L G L S F R K D L
241/81 271/91
TTC ATC GCC ACC TAC CAG GCC TTC CCC CCC ATG CCC AAC CCA CCT CGG CCC CCC ACC CGC
F I A T Y Q A F P P M P N P P R P P T R
301/101 331/111
CTA CAG GAC CGA CTG CTG AAG AAG TTG GGC CAG CAT GCC CAC CCC TTT TTT TTC ACA ATA
L Q D R L L K K L G Q H A H P F F F T I
361/121 391/131
CCC CAG AAT TTG CCT TGC TCC GTC ACA CTG CAG CCA GGA CCG GAG GAC ACA GGG AAG GCC
P Q N L P C S V T L Q P G P E D T G K A
421/141 451/151
TGT GGA GTA GAC TTT GAG ATT CGA GCC TTC TGT GCC AAA TCT ATA GAA GAA AAA AGC CAC
C G V D F E I R A F C A K S I E E K S H
481/161 511/171
AAA AGG AAC TCC GTG CGG CTT ATC ATC AGA AAG GTA CAG TTT GCT CCT GAG ACA CCC GGC
K R N S V R L I I R K V Q F A P E T P G
541/181 571/191
CCC CAG CCA TCA GCT GAA ACC ACA CGC CAC TTC CTC ATG TCT GAC CGG AGG TCC CTG CAC
P Q P S A E T T R H F L M S D R R S L H
601/201 631/211
CTA GAG GCT TCC CTG GAC AAA GAG CTG TAC TAC CAT GGC GAA CCC CTC AAT GTC AAC GTC
L E A S L D K E L Y Y H G E P L N V N V
661/221 691/231
CAC GTC ACC AAC AAT TCT GCC AAG ACC GTC AAG AAG ATC AGA GTG TCT GTG AGA CAG TAT
H V T N N S A K T V K K I R V S V R Q Y
721/241 751/251
GCC GAC ATT TGC CTC TTC AGC ACC GCG CAG TAC AAG TGT CCT GTG GCT CAG CTT GAA CAA
A D I C L F S T A Q Y K C P V A Q L E Q
781/261 811/271
GAT GAC CAG GTG TCT CCC AGT TCC ACA TTC TGC AAG GTG TAC ACC ATA ACC CCG CTG CTC
D D Q V S P S S T F C K V Y T I T P L L
841/281 871/291
AGT GAC AAC CGA GAG AAG CGT GGC CTT GCC CTT GAT GGC CAA CTC AAG CAC GAA GAC ACC
S D N R E K R G L A L D G Q L K H E D T
901/301 931/311
AAC CTG GCT TCC AGC ACC ATT GTG AAG GAG GGA GCC AAC AAG GAG GTG CTG GGA ATC CTA
N L A S S T I V K E G A N K E V L G I L
961/321 991/331
GTA TCC TAC AGG GTC AAG GTG AAG CTG GTG GTG TCT CGA GGC GGC GAT GTC TCC GTG GAG
V S Y R V K V K L V V S R G G D V S V E
1021/341 1051/351
CTA CCT TTC GTC CTA ATG CAC CCC AAG CCC CAC GAC CAC ATC ACC CTT CCC CGA CCC CAG
L P F V L M H P K P H D H I T L P R P Q
1081/361 1111/371
TCA GCC CCC CGG GAA ATA GAC ATC CCT GTG GAT ACC AAC CTC ATT GAA TTC GAT ACC AAC
S A P R E I D I P V D T N L I E F D T N
1141/381 1171/391
TAT GCC ACA GAC GAC GAC ATC GTG TTT GAG GAC TTT GCG AGG CTT CGG CTG AAG GGG ATG
Y A T D D D I V F E D F A R L R L K G M
1201/401 1231/410

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FIG. 10B

AAG GAT GAC GAC TGT GAT GAC CAG TTC TGC GTC GAC CAG ATC TTC GTG AAG ACT CTG
K D D D C D D Q F C V D Q I F V K T L
22/8 52/18
ACT GGT AAG ACC ATC ACC CTC GAG GTG GAG CCC AGT GAC ACC ATC GAG AAT GTC AAG GCA
T G K T I T L E V E P S D T I E N V K A
82/28 112/38
AAG ATC CAA GAT AAG GAA GGC ATT CCT CCT GAT CAG CAG AGG TTG ATC TTT GCC GGA AGA
K I Q D K E G I P P D Q Q R L I F A G R
142/48 172/58
CAG CTG GAA GAT GGT CGT ACC CTG TCT GAC TAC AAC ATC CAG AAA GAG TCC ACC TTG CAC
Q L E D G R T L S D Y N I Q K E S T L H
202/68
CTG GTA CTC CGT CTC AGA GGT GGG TGA
L V L R L R G G ***

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FIG. 11A Human G Protein Coupled Receptor Family
(Receptors known as of January, 1999)

| CLASS | LIGAND | NUMBER | TISSUE | PHYSIOLOGY | THERAPEUTICS |
|----------------------------|--|--------|--------------------------|--------------------------|---|
| •Class I Rhodopsin like | •Amine | | | | |
| | •Acetylcholine (muscarinic & nicotinic) | 5 | Brain, Nerves, Heart | Neurotransmitter | Acuity, Alzheimer's |
| | •Adrenoceptors | | | | |
| | •Alpha Adrenoceptors | 6 | Brain, Kidney, Lung | Gluconeogenesis | Diabetes, Cardiovascular |
| | •Beta Adrenoceptors | 3 | Kidney, Heart | Muscle Contraction | Cardiovascular, Respiratory |
| | •Dopamine | 5 | Brain, Kidney, GI | Neurotransmitter | Cardiovascular, Parkinson's |
| | •Histamine | 2 | Vascular, Heart, Brain | Vascular Permeability | Anti-inflammatory, Ulcers |
| | •Serotonin (5-HT) | 16 | Most Tissues | Neurotransmitter | Depression, Insomnia, Analgesic |
| | •Peptide | | | | |
| | •Angiotensin | 2 | Vascular, Liver, Kidney | Vasoconstriction | Cardiovascular, Endocrine |
| | •Bradykinin | 1 | Liver, Blood | Vasodilation, | Anti-inflammatory, Asthma |
| | •C5a anaphylatoxin | 1 | Blood | Immune System | Anti-inflammatory |
| | •Fmet-leu-phe | 3 | Blood | Chemoattractant | Anti-inflammatory |
| | •Interleukin-8 | 1 | Blood | Chemoattractant | Anti-inflammatory |
| | •Chemokine | 6 | Blood | Chemoattractant | Anti-inflammatory |
| | •Orexin | 2 | Brain | Fat Metabolism | Obesity |
| | •Nociceptin | 1 | Brain | Bronchodilator, Pain | Airway Diseases, Anesthetic |
| | •CCK (Gastrin) | 2 | Gastrointestinal | Motility, Fat Absorption | Gastrointestinal, Obesity, Parkinson's |
| | •Endothelin | 2 | Heart, Bronchus, Brain | Muscle Contraction | Cardiovascular, Respiratory |
| | •Melanocortin | 5 | Kidney, Brain | Metabolic Regulation | Anti-inflammatory, Analgesics |
| | •Neuropeptide Y | 5 | Nerves, Intestine, Blood | Neurotransmitter | Behavior, Memory, Cardio-vascular |
| | •Neurotensin | 1 | Brain, | CNS | Cardiovascular, Analgesic |

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FIG. 11B

| | | | | |
|----------------------------------|----------|-----------------------------|---------------------|---------------------------------------|
| ·Opioid | 3 | Brain, | CNS | Depression, Analgesic |
| ·Somatostatin | 5 | Brain, Gastrointestinal | Neurotransmitter | Oncology, Alzheimer's |
| ·Tachykinin | | | | |
| (Substance P, NKA ₁) | 3 | Brain Nerves | Neurohormone | Depression, Analgesic |
| ·Thrombin | 3 | Platelets, Blood Vessels | Coagulation | Anti-coagulant, Anti-inflammatory |
| ·Vasopressin-like | 4 | Arteries, Heart, Bladder | Water Balance | Anti-diuretic, Diabetic Complications |
| ·Galanin | 1 | Brain, Pancreas | Neurotransmitter | Analgesics, Alzheimer's |
| ·Hormone protein | | | | |
| ·Follicle stimulating hormone | 1 | Ovary, Testis | Endocrine | Infertility |
| ·Lutropin-choriogonadotropic | 1 | Ovary, Testis | Endocrine | Infertility |
| ·Thyrotropin | 1 | Thyroid | Endocrine | Thyroidism, Metabolism |
| ·(Rhod)opsin | | | | |
| ·Opsin | 5 | Eye | Photoreception | Ophthalmic Diseases |
| ·Olfactory | 4(~1000) | Nose | Smell | Olfactory Diseases |
| ·Prostanoid | | | | |
| ·Prostaglandin | 5 | Arterial, Gastrointestinal | Vasodilation, Pain | Cardiovascular, Analgesic |
| ·Lysophosphatidic Acid | 2 | Vessels, Heart, Lung | Inflammation | Cancer, Anti-Inflammatory |
| ·Sphingosine-1-phosphate | 2 | Most Cells | Cell proliferation | Cancer |
| ·Leukotriene | 1 | White Blood Cells, Bronchus | Inflammation | Asthma, Rheumatoid Arthritis |
| ·Prostacyclin | 1 | Arterial, Gastrointestinal | Platelet Regulation | Cardiovascular |
| ·Thromboxane | 1 | Arterial, Bronchus | Vasoconstriction | Cardiovascular, Respiratory |
| ·Nucleotide-like | | | | |
| ·Adenosine | 4 | Vascular, Bronchus | Multiple Effects | Cardiovascular, Respiratory |
| ·Purinoreceptors | 4 | Vascular, Platelets | Relaxes Muscle | Cardiovascular, Respiratory |
| ·Cannabis | 2 | Brain | Sensory Perception | Analgesics, Memory |
| ·Platelet activating factor | 1 | Most Peripheral Tissues | Inflammation | Anti-inflammatory, Anti-asthmatic |

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FIG. 11C

| | | | | | | | |
|---|--|--|--|---|---|--------------------------------|-----------------------------------|
| •Class II | | | | •Class III | | | |
| Secretin like | | | | | | | |
| •Gonadotropin-releasing hormone like | | | | •Gonadotropin-releasing hormone | 1 | Reproductive Organs, Pituitary | Prostate Cancer, Endometriosis |
| •Gonadotropin-releasing hormone | | | | •Thyrotropin-releasing hormone | 1 | Pituitary, Brain | Metabolic Regulation |
| •Thyrotropin-releasing hormone | | | | •Growth hormone- inhibiting factor | 1 | Gastrointestinal | Oncology, Alzheimer's |
| •Growth hormone- inhibiting factor | | | | •Melatonin | 1 | Brain, Eye, Pituitary | Regulation of Circadian Cycle |
| •Secretin | | | | •Secretin | 1 | Gastrointestinal, Heart | Obesity, Gastrointestinal |
| •Calcitonin | | | | •Calcitonin | 1 | Bone, Brain | Osteoporosis |
| •Corticotropin releasing factor/urocortin | | | | •Corticotropin releasing factor/urocortin | 1 | Adrenal, Vascular, Brain | Stress, Mood, Obesity |
| •Gastric inhibitory peptide (GIP) | | | | •Gastric inhibitory peptide (GIP) | 1 | Adrenals, Fat Cells | Diabetes, Obesity |
| •Glucagon | | | | •Glucagon | 1 | Liver, Fat Cells, Heart | Cardiovascular |
| •Glucagon-like Peptide 1 (GLP-1) | | | | •Glucagon-like Peptide 1 (GLP-1) | 1 | Pancreas, Stomach, Lung | Cardiovascular, Diabetes, Obesity |
| •Growth hormone-releasing hormone | | | | •Growth hormone-releasing hormone | | Brain | Growth Regulation |
| •Parathyroid hormone | | | | •Parathyroid hormone | 1 | Bone, Kidney | Osteoporosis |
| •PACAP | | | | •PACAP | 1 | Brain, Pancreas, Adrenals | Metabolic Regulation |
| •Vasoactive intestinal polypeptide (VIP) | | | | •Vasoactive intestinal polypeptide (VIP) | 1 | Gastrointestinal | Gastrointestinal |
| •Metabotropic Glutamate | | | | •Metabotropic Glutamate | 7 | Brain | Hearing, Vision |
| •GABA _B | | | | •GABA _B | 1 | Brain | Mood Disorders |
| •Extracellular Calcium Sensing | | | | •Extracellular Calcium Sensing | 1 | Parathyroid, Kidney, GI Tract | Cataracts, GI Tumors |

FIG. 11D

G protein-coupled receptors:
(Division into Class A
Or Class B)

1. **A1 adenosine receptor** [Homo sapiens]. **ACCESSION AAB25533**
npivyaf riqkfrvtfl kiwndhfrq pappidedlp eerpdd
Class A
2. **adrenergic, alpha -1B-, receptor** [Homo sapiens]. **ACCESSION NP_000670**
npiipcsskefkrafvrlgcqcrgrrrrrrrrlggcaytyrpwtrggslersqsrkdslddsgscslsgsqrtilpsaspspgylgr
gappvelcafepwkapgallspapeppgrrgrhdsqplftfklltepespgtdggasnggceaaadvangqpgfksnmpla
pgqf
Class A
3. **adrenergic receptor alpha-2A** [Homo sapiens]. **ACCESSION AAG00447**
npviytifnhdffrafkklcrgdrkriv
Class A
4. **alpha-2B-adrenergic receptor - human.** **ACCESSION A37223**
npviytifnqdfrafrilcrpwtqtaw
Class A
5. **alpha-2C-adrenergic receptor - human.** **ACCESSION A31237**
npviytfvfnqdfpsfkhlfrrrrgfrq
Class A
6. **beta-1-adrenergic receptor** [Homo sapiens]. **ACCESSION NP_000675**
npiiyrcspdfrikafqglccarraarrhathgdrprasgclarpqpppsgaasddddddvvgatpparllpewagcnggaa
adss ssldepcrpgfaseskv
Class A
7. **beta-2 adrenergic receptor.** **ACCESSION P07550**
npiiyrcspdfriaqfcllrrsslkayngyssngntgeqsgyhveqekenklcedlpgtedfvghqgtvpsdnidsqgrncs
tndsl
Class A
8. **dopamine receptor D1** [Homo sapiens]. **ACCESSION NP_000785**
npiiyafnadfrkafstllgcyrlepatnnaletvsinnngaamfsshheprgsiskecnlyliphavgssedlkkeeaagiapl
eklspalsvildytdvslekiqpitqngqhpt
Class A
9. **D(2) dopamine receptor.** **ACCESSION P14416**
npiiyttfniefkafkilh
Class A

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FIG. 11E

10. **d3 dopamine receptor** - human. ACCESSION G01977
npviyttfniefkrakflkisc
Class A
11. **dopamine receptor D4** - human. ACCESSION DYHUD4
npviytfvnaefrnvfrkalracc
Class A
12. **dopamine receptor D5** - human. ACCESSION DYHUD5
npviyafnadfqkvfaqllgcshfcsrtpvtnisnelisynqdivfhkeiaaayihmmpnavtpgnrevdndeeegpfdm
fqiyqtspdgdpvaesvwelcdcegisldkitpftpngfh
Class A
13. **muscarinic acetylcholine receptor M1** [Homo sapiens]. ACCESSION NP_000729
nrmcyalcnkaftrdfrlllcrwdkrrwrkipkrpgsvhrtpsrqc
Class A
14. **muscarinic acetylcholine receptor M2** [Homo sapiens]. ACCESSION NP_000730
npacyalcnatfkkfkhllmchyknigatr
Class A
15. **muscarinic acetylcholine receptor M3** [Homo sapiens].
npvcyalcnktfrttfkmlllcqcdkkrkqyqqrqsvifhkrapeqal
Class A
16. **muscarinic acetylcholine receptor M4** [Homo sapiens]. ACCESSION NP_000732
npacyalcnatfkkftrhlllcqyrnigtar
Class A
17. **m5 muscarinic receptor**. locus HUMACHRM ACCESSION AAA51569
npicyalcnrtrfktfkmlllcrwkkkkveeklywqgnsklp
Class A
18. **5-hydroxytryptamine (serotonin) receptor 1A** [Homo sapiens]. ACCESSION
BAA90449
npviyayfnkdfqnafkikiickf
Class A
19. **5-hydroxytryptamine (serotonin) receptor 1B** [Homo sapiens]. ACCESSION
BAA94455
npiiytmsnedfkqafhklirfkets
Class A

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FIG. 11F

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20. **5-hydroxytryptamine (serotonin) receptor 1E** [Homo sapiens]. **ACCESSION** BAA94458
 npilytsfndfklafkkllrcr
Class A

21. **OLFACTORY RECEPTOR 6A1**. **ACCESSION** O95222
 npiiyclrnqevkralccilhlyqhdpdpkkgssrnv
Class A

22. **OLFACTORY RECEPTOR 2C1**. **ACCESSION** O95371
 nplytlrnmekvgalrrllgkgrevg
Class A

23. **angiotensin receptor 1** [Homo sapiens]. **ACCESSION** NP_033611
 nplfygflgkfkryflqllkyippkakshsnlsfkmstlsyrpsdnvssstkkpapkfeve
Class B

24. **angiotensin receptor 2** [Homo sapiens]. **ACCESSION** NP_000677
 npflycfvgnrffqqlrsvfrvpitwlqgkresmscrkssslremetfvs
Class B

25. **interleukin 8 receptor beta (CXCR2)** [Homo sapiens]. **ACCESSION** NM_001557
 NPLIYAFIGQKFRHGLLKILAIHGLISKDSLPKDSRPSFVGSSSGHTSTTL
Class B

26. **cx3c chemokine receptor 1 (cx3cr1)** (fractalkine receptor)
ACCESSION P49238
 npliyafagekfrylyhlygkclavlcgrsvhvdffsssesqsrhgsvglssnftyhtsdgdallll
Class B

27. **neurotensin receptor - human**. **ACCESSION** S29506
 n pilynlvsanfrhiflatlaclepwwrrrrkrpafsrkadsvssnhflssnatretly
Class B

28. **SUBSTANCE-P RECEPTOR (SPR) (NK-1 RECEPTOR) (NK-1R)**. **ACCESSION** P25103
 npiiyccldndrflgfkhafrccpfisagdyeglemkstrylqtqgsvykvsrletfistfvvgaheepedgpkatpssldltsncssrsdskt
 mtesfsfsnvl
Class B

29. **vasopressin receptor type 2** [Homo sapiens]. **ACCESSION** AAD16444
 npwiyasfsssvsselsllccargtrtpslgpqdescftassslakdtss
Class B

30. **thyrotropin-releasing hormone receptor - human**. **ACCESSION** JN0708
 npviynlmsqkfraafklcnckqkptekpanysvalnysvikesdhfsteldditvtdtlylsafkvsfddtclasevvsfsqs
Class B

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FIG. 11G

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31. **oxytocin receptor - human.** ACCESSION A55493
npwiymllftghlfhelvqrfllccsasykgrlgetsaskksnsssfvlshrsssqrcsqpsta
Class B
32. **neuromedin U receptor 1 [Homo sapiens].** ACCESSION AAG24793
npvlyslmssrfretfqealcigacchrlprhsshslsrmttgstlcdvgslgswvhplagndgpeaqgetdps
Class B
33. **gastrin receptor.** ACCESSION AAC37528
nplvyvcmhrrfrqacletcarccprpprarpralpdedpptsiaslsrlyttistlgpg
Class B
34. **galanin receptor 3 [Homo sapiens].** ACCESSION 10879541
nplvyalasrhfrarfrlwpcgrrrrhrraralrrvpassgppgcpgdarpsgrllaggqgpepregpvhggeaargpe
Class A
35. **edg-1 - human.** ACCESSION A35300
npiiytltlnkemrrafirimsceckcpgdsagkfrpiiagmefsrsksdnsshpqkdegdnpetimssgnvnss
Class A
36. **central cannabinoid receptor [Homo sapiens].** ACCESSION NP_057167
npiiyalrskdlrhafirmsfpcgeqtaqpldnsmgdsdclhkhannaasvhraaescikstvkiakvtmsvstdtsaeal
Class A
37. **delta opioid receptor - human.** ACCESSION I38532
npvlyafldenfkrcfrqlcrkpcgrdpssfsrpreatarervtactpsdggpggraa
Class A
38. **proteinase activated receptor 2 (PAR-2) human.** ACCESSION P55085
dpfvyyfvshdfrdhaknallcrsvrtvkqmqvsltskkhsrksssysssttvktsy
Class B
39. **vasopressive intestinal peptide receptor (VIPR) rat.** ACCESSION NM_012685
NGEVQAELRRKWRRWHLQGVLGWSSKSQHPWGGSNATCSTQVSMLTRVSPSA
RRSSSFQAEVSLV
Class B